

## HSR-Irwin 4-1A: Packer and Remedial Cement

- 1 ND BOP. Unland production casing (4-1/2", 11.6#, I-70), ND surface casing head and NU double entry flange. 1991 vintage casing, don't pull with more than 100,000lbs (50% of virgin joint strength).
- 2 Pick up concentrated mud flush (Alcomer 74L – liquid mud thinner in 5 gallon bucket) from Imperial.
- 3 PU 158 jnts of TBG (1-1/4", 2.33#, J-55, IJ). Run in annulus with pup jnt with CutRight, burn shoe or mule shoe on 1-1/4" tbg to 4900' or as deep as possible while circulating. Circulate mud flush sweeps intermittently (about 3 or 4 while TIH). If TBG hits tight spots work it for a bit while circulating to break the bridge as best possible. Call engineering if there is difficulty making depth or if a power swivel is necessary to break bridging.
- 4 Once EOT of 1-1/4" is at 4900' circulate another 4 hours minimum using at least 1 mud flush sweep.
- 5 Order and pump 10 bbls of 10# mud from Imperial. Displace with 8.3 bbl of fresh water to prevent unbalanced flow back. Note: Don't put mud in tanks contaminated with mud flush.
- 6 Pull out of annulus (POOA) with 1-1/4" TBG so EOT at +/- 4700'.
- 7 MIRU cementing services.
- 8 Mix & pump as follows: 5 bbls fresh water, 10 bbls Sodium Metasilicate (SMS), 10 bbl fresh water spacer, 28.05 bbls Sussex coverage blend cement, and 1/4#/sk Cello Flake (retarded by cementing service company for a 4 hour pumping time at 120° F). Design is for coverage from 4700' to 4237' in 8.5" Borehole with a 20% excess (has caliper log). See calculation for cement details. Displace with 7.2 bbls of fresh water.
- 9 POOA with 1-1/4" tbg to +/- 4000' and circulate until clean.
- 10 POOA and SB tbg. ND double entry flange and re-Land the 4-1/2" production casing immediately. NU wellhead.
- 11 Shut in and WOC for 36 hrs minimum before un-landing casing.
- 12 ND WH. Unland production casing, ND surface casing head and NU double entry flange.
- 13 TIH (annulus) with 1-1/4" TBG so EOT 1300'.
- 14 Once EOT of 1-1/4" is at 1300' circulate another 4 hours minimum using at least 1 mud flush sweep.
- 15 MIRU cement services.
- 16 Mix & pump as follows: 10 bbls SMS, 10 bbl fresh water spacer 400 sks type III cement & 1/4#/sk Cello Flake, mixed at 14.8 ppg and yield of 1.33 cuft/sk (retarding as determined by cementing service company for a 3 hour pumping time at 80°F) for a total of 94.7 bbl of cement. Displace with 0.5 bbl of fresh water Design is for coverage from 1300' to 330' in 10.5" Borehole (no caliper log) and 136' in 8.1" ID surface casing with a 20% excess. See Calculation if necessary.
- 17 POOH with 1-1/4" to +/- 300' and circulate until clean. Finish POOH and LD 1-1/4" tbg.
- 18 Re-land 4-1/2" production casing immediately. NU 5000 psi tubing head and BOP on production casing.
- 19 Shut in and WOC 12 hours minimum for CBL and 20 hrs until pressure testing packer in step 36.
- 20 MIRU Wireline Services. PU and RIH w/ CCL-CBL-VDL tools and log from 4,900' to surface. NOTE: IF CEMENT COVERAGE IS NOT SUFFICIENT OR HAS POOR BOND, CONTACT EVANS ENGINEERING. Clear with Evans engineering and email logs to Jacob.Barker@Anadarko.com before proceeding. Email copies of logs, summaries and invoices to rscDJVendors@Anadarko.com within 48 hrs.
- 21 POOH, RDMO wireline service company.